

ABSTRACT

A liquid crystal cell having a first substrate with a plurality of parallel columns of director alignment material disposed on a surface of the first substrate. Each one of the columns has a longitudinal axis disposed at an oblique angle with respect the surface of the first substrate. Each one of the columns terminates in a distal end having a surface substantially flat and substantially parallel to the surface of the first substrate. A second substrate is provided. A liquid crystal material is disposed between the surfaces of the first and second substrates with portions of such liquid crystal material being in contact with the parallel columns of director alignment material. A method for forming a liquid crystal substrate structure is provided. The method includes providing a substrate in a chamber. A surface of the substrate is subjected to a deposition flux of director alignment material with such flux passing to the substrate surface along a first axis having an oblique angle with respect to a normal to the surface of the substrate while a beam of particles is directed to the surface of the substrate along a second axis, the second axis being at an obtuse angle with respect to the first axis to produce a director alignment layer. A liquid crystal material is deposited on the director alignment layer.